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| 10/578,001 | 05/03/2006 | Shunpei Yamazaki | 740756-2967 | 3719 |
| 22204 | 7590 | 11/13/2008 | | |
| NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128 | | | EXAMINER KARIMY, MOHAMMAD TIMOR | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--|--|--|
| Office Action Summary | Application No. 10/578,001 | Applicant(s) YAMAZAKI ET AL. | |
| | Examiner MOHAMMAD Timor KARIMY | Art Unit 2894 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/3/06 & 8/14/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of claims 1-19, without traverse, in the reply filed on 02/15/2008 is acknowledged.

Product-by-Process Limitations

2. While not objectionable, the Office reminds applicant that "product by process" limitations in claims drawn to structure are directed to the product, per se, no matter how actually made. In re *Hirao*, 190 USPQ 15 at 17 (footnote 3). See also, in re *Brown*, 173 USPQ 685; In re *Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wethheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); *In re Marosi et al.*, 218 USPQ 289; and particularly *In re Thorpe*, 227 USPQ 964, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or otherwise. Note that applicant has the burden of proof in such cases, as the above case law makes clear. Thus, no patentable weight will be given to those process steps which do not add structural limitations to the final product.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-8 recite the limitation “the first conductive layer is **wider** and **thicker** than the second conductive layer”. It is not clear if the terms “wider” and “thicker” are synonym of one another or said terms imply a different scope. As illustrated in applicant’s Fig. 18A, the first conductive layer is thicker than the second conductive layer 104, which is in a vertical direction; however, the second conductive layer is wider than the first conductive layer in horizontal direction.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-2, 10 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Hashimoto et al (US Pub. 2002/0089616 A1).

With respect to claim 1, Hashimoto discloses in figures 1-7, a thin film transistor comprising:

an insulating layer (see Fig. 5 below) having a first opening;

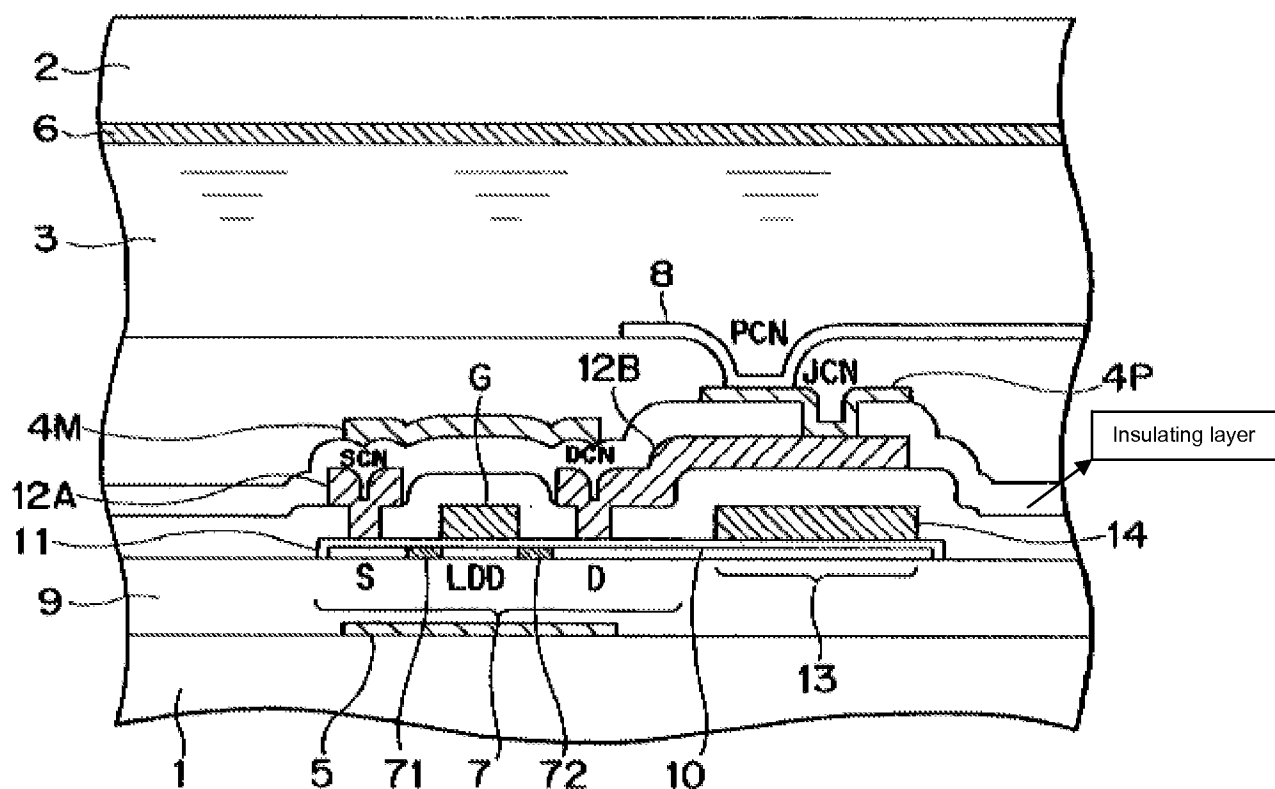
a first conductive layer 12B in the first opening;

a second conductive layer 4p on and in contact with the first insulating layer

and the first conductive layer 12B;

wherein the first conductive layer 12B is **wider and thicker** than the second conductive layer 4p.

FIG. 5



With respect to claim 10, Hashimoto implicitly teaches in Fig. 5 the thin film transistor of claim 1, wherein the thin film transistor further comprises a light

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shielding film 5 below the first conductive layer 12B (Hashimoto teaches titanium as the material for a similar light shield film in Para [0005]).

With respect to claim 19, Hashimoto implicitly teaches in Fig. 5 the thin film transistor of claim 1, wherein a television apparatus can include the thin film transistor of claim 2.

Moreover, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987).

With respect to claim 2, Hashimoto discloses in figures 1-7, a thin film transistor comprising:

- an insulating layer (see Fig. 5 above) having a first opening;

- a first conductive layer 12B in the first opening;

- a second conductive layer 4p on and in contact with the first insulating layer and the first conductive layer 12B;

wherein the first conductive layer 12B is **wider and thicker** than the second conductive layer 4p.

The limitation “wherein the second conductive layer is formed by a droplet discharge method using a conductive material” is a product by process limitation, and it does not result to a structurally distinguishable product over Hashimoto’s device. Moreover, the method of forming a device is not germane to the issue of

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patentability of the device itself. Therefore, this limitation has not been given patentable weight.

7. Claims 3-8, 16 and 18 are rejected under 35 U.S.C. 102(b) as being anticipated by Yamazaki (US Patent 6,365,917 B1).

With respect to claim 3, Yamazaki discloses in figures 1-23B, a display device comprising:

- a first insulating layer 103 having a first opening;

- a first conductive layer 112 in the first opening (Fig. 9A);

- a second conductive layer (plug connected to 112 in Fig. 9A) on and in contact with the first insulating layer 103 and the first conductive layer 112;

- a semiconductor layer 107 over the second conductive layer with a gate insulating film there between (Fig. 9A);

- a third conductive layer 36/1704 over the semiconductor layer 107 (Fig. 9A-C & 17);

- a second insulating layer 1711 having an opening over the third conductive layer 36/1704 (fig. 17); and

- a fourth conductive layer 1714 in the second opening;

wherein the first conductive layer 112 is **wider and thicker** than the second conductive layer,

wherein the fourth conductive layer 1714 is thicker than the third conductive layer 1704.

With respect to claim 18, Hashimoto implicitly teaches in Fig. 5 the thin film transistor of claim 3, wherein a television apparatus can include the display device of claim 3.

Moreover, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex Parte Masham*, 2 USPQ F.2d 1647 (1987).

With respect to claim 4, Yamazaki discloses in figures 1-23B, a display device comprising:

- a first insulating layer 103 having a first opening (Fig. 9A);
 - a first conductive layer 112 in the first opening (Fig. 9A);
 - a second conductive layer (plug connected to 112 in Fig. 9A) on and in contact with the first insulating layer 103 and the first conductive layer 112;
 - a semiconductor layer 107 over the second conductive layer with a gate insulating film there between (Fig. 9A);
 - a third conductive layer 36/1704 over the semiconductor layer 107 (Fig. 9A-C & Fig. 17);
 - a second insulating layer 1711 having an opening over the third conductive layer 36/1704 (Fig. 17); and
 - a fourth conductive layer 1714 in the second opening;
- wherein the first conductive layer 112 is **wider and thicker** than the second conductive layer,

wherein the fourth conductive layer 1714 is thicker than the third conductive layer 1704.

The limitation “wherein each of the second conductive layer and the third conductive layer is formed by a droplet discharge method using a conductive material” is a product by process limitation, and it does not result to a structurally distinguishable product over Yamazaki’s device. Moreover, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

With respect to claim 5, Yamazaki discloses in figures 1-23B, a display device comprising:

- a first insulating layer 103 having a first opening (Fig. 9A);
- a first conductive layer 112 in the first opening (Fig. 9A);
- a second conductive layer (plug connected to 112 in Fig. 9A) on and in contact with the first insulating layer 103 and the first conductive layer 112;
- a semiconductor layer 107 over the second conductive layer with a gate insulating film there between (Fig. 9A);
- a pair of third conductive layer (36 & 38/1704) over the semiconductor layer 107 (Fig. 9A-C & Fig. 17);
- a first electrode 1712 over one of the pair of third conductive layers 1704 (Fig. 17);
- an electroluminescent layer 1714 over the first electrode 1712; and
- a second electrode 1716 over the electroluminescent layer 1714,

wherein the first conductive layer is **wider and thicker** than the second conductive layer.

With respect to claim 6, Yamazaki discloses in figures 1-23B, a display device comprising:

- a first insulating layer 103 having a first opening (Fig. 9A);
 - a first conductive layer 112 in the first opening (Fig. 9A);
 - a second conductive layer (plug connected to 112 in Fig. 9A) on and in contact with the first insulating layer 103 and the first conductive layer 112;
 - a semiconductor layer 107 over the second conductive layer with a gate insulating film there between (Fig. 9A);
 - a pair of third conductive layer (36 & 38/1704) over the semiconductor layer 107 (Fig. 9A-C & Fig. 17);
 - a first electrode 1712 over one of the pair of third conductive layers 1704 (Fig. 17);
 - an electroluminescent layer 1714 over the first electrode 1712; and
 - a second electrode 1716 over the electroluminescent layer 1714 (Fig. 17),
- wherein the first conductive layer is **wider and thicker** than the second conductive layer (Fig. 9A & 17).

The limitation “wherein the second conductive layer is formed by a droplet discharge method using a conductive material” is a product by process limitation, and it does not result to a structurally distinguishable product over Yamazaki’s device. Moreover, the method of forming a device is not germane to the issue of

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patentability of the device itself. Therefore, this limitation has not been given patentable weight.

With respect to claim 7, Yamazaki discloses in figures 1-23B, a display device comprising:

- a first insulating layer 103 having a first opening (Fig. 9A);

- a first conductive layer 112 in the first opening (Fig. 9A);

- a second conductive layer (plug connected to 112 in Fig. 9A) on and in contact with the first insulating layer 103 and the first conductive layer 112;

- a semiconductor layer 107 over the second conductive layer with a gate insulating film there between (Fig. 9A);

- a pair of third conductive layer (36 & 38/1704) over the semiconductor layer 107 (Fig. 9A-C & Fig. 17);

- a first electrode 1712 over one of the pair of third conductive layers 1704 (Fig. 17);

- a second insulating layer 1711 having a second opening over the other one of the pair of third conductive layers 1704;

- a fourth conductive layer (portions of 1714 in the opening) in the second opening;

- an electroluminescent layer 1714 over said first electrode 1712; and

- a second electrode 1716 over the electroluminescent layer 1714 (Fig. 17),

wherein the first conductive layer is **wider and thicker** than the second conductive layer (Fig. 9A & 17),

wherein the fourth conductive layer within the second opening is thicker than the pair of third conductive layers.

With respect to claim 8, Yamazaki discloses in figures 1-23B, a display device comprising:

- a first insulating layer 103 having a first opening (Fig. 9A);
 - a first conductive layer 112 in the first opening (Fig. 9A);
 - a second conductive layer (plug connected to 112 in Fig. 9A) on and in contact with the first insulating layer 103 and the first conductive layer 112;
 - a semiconductor layer 107 over the second conductive layer with a gate insulating film there between (Fig. 9A);
 - a pair of third conductive layer (36 & 38/1704) over the semiconductor layer 107 (Fig. 9A-C & Fig. 17);
 - a first electrode 1712 over one of the pair of third conductive layers 1704 (Fig. 17);
 - a second insulating layer 1711 having a second opening over the other one of the pair of third conductive layers 1704;
 - a fourth conductive layer (portions of 1714 in the opening) in the second opening;
 - an electroluminescent layer 1714 over said first electrode 1712; and
 - a second electrode 1716 over the electroluminescent layer 1714 (Fig. 17),
- wherein the first conductive layer is **wider and thicker** than the second conductive layer (Fig. 9A & 17),

wherein the fourth conductive layer within the second opening is thicker than the pair of third conductive layers (note the portion of 1714 towards the top of the second opening having a larger thickness).

The limitation “wherein each of the second conductive layer and the third conductive layer is formed by **a droplet discharge method** using a conductive material” is a product by process limitation, and it does not result to a structurally distinguishable product over Yamazaki’s device. Moreover, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

With respect to claim 16, Yamazaki teaches the display device according to claim 3, wherein the semiconductor layer is a polycrystalline semiconductor

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hashimoto as applied to claim 1 above, and in view of Fujiwara et al. (US Patent 5,329,390).

With regard to claim 9, though Hashimoto implicitly teaches titanium as the material used for a light shield film; however, Hashimoto is silent about the use of

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titanium oxide. Nonetheless, titanium oxide is widely known to be used as one of the light shielding material optical devices. For instance, Fujiwara lists titanium oxide as one of the material used in a light shielding layer (column 4 lines 19-27). As such, the use of titanium oxide would have been obvious to a person of ordinary skill in the art.

10. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki as applied to claim 8 above, and in view of Yamazaki et al. (US Pub. 2002/0132396 A1).

With respect to claim 11, though Yamazaki ('917) does not discuss the material used for the second and third conductive layers; however, the use of copper in conductive wiring is known to those of ordinary skill in the art due to copper's high electrical conductivity. For instance, Yamazaki ('396) discusses the use of copper wiring for electric connection. As such, the use of copper in conductive wiring is within the knowledge of one of ordinary skill in the art.

11. Claims 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki as applied to claim 8 above.

With respect to claims 13 and 17, though Yamazaki discusses a channel forming region; however, Yamazaki does not disclose a range of from 5 to 100 μm for a channel width. Notwithstanding, one of ordinary skill in the art would have been led to the recited dimensions through routine experimentation and optimization. Applicant has not disclosed that the dimensions are for a particular

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unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

12. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki as applied to claim 8 above, and in further view of Young (US Pub. 20010013913 A1).

With respect to claims 14-15, though Yamazaki does not discuss the use amorphous silicon in the semiconductor layer (gate electrode); nonetheless, it is widely known in the semiconductor art to use amorphous semiconductor in TFT gate structures. For instance, Young discusses in Fig. 4 amorphous semiconductor gate structures. Therefore, the use of amorphous semiconductor material in TFT gate structures would have been obvious to one of ordinary skill in the art.

Response to Arguments

13. Applicant's arguments with respect to independent claims 1-3, filed 08/14/2008, have been fully considered but they are not persuasive. Examiner

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submits that claims 1-2 remain broad, and Hashimoto's device meet the limitations presented in said claims (see claims 1-2 rejection above).

Applicant's arguments with respect to independent claim 3-8 have been considered but are moot in view of the new ground(s) of rejection.

Examiner would also like point that out that it will be helpful if applicant indicates as to which one of applicant's drawing/s contain the limitations of claim 8 – in other words, which of applicant's drawing/s would be a good point of reference for the limitations of claim 8.

Also, "Written Opinion of the International Searching Authority for PCT/JP2004/018073" has been considered.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammad Timor Karimy whose telephone number is 571-272-9006. The examiner can normally be reached on 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Nguyen can be reached on 571-272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mtk

/Kimberly D Nguyen/
Supervisory Patent Examiner, Art
Unit 2894